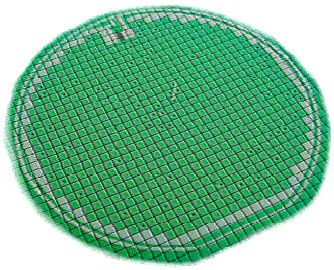
MS761 PRESSURE SENSOR DIE (0-1 BAR)



- **0 to 100 kPa bar range (1 bar or 14.5 PSI)**
- **High Sensitivity**
- **ROHS-Compatible & Pb-free[1]**

DESCRIPTION

The sensor element of the MS761A consists of a silicon micro-machined membrane with a Pyrex glass mounted under vacuum. Implanted resistors make use of the piezo-resistive effect. The absolute pressure sensor (MS761-A) carries a sealed vacuum reference cavity underneath the membrane whereas the differential sensor (S-761-D) has a hole in the Pyrex glass at the backside of the sensor.

FEATURES

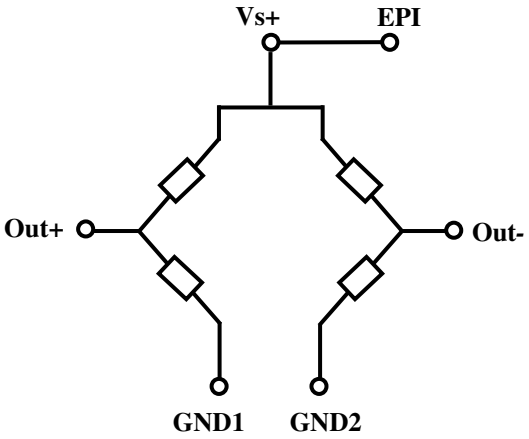
- Uncompensated pressure sensor die
- High Sensitivity: Output Span 240 mV @ 5V
- Temperature Range -40℃ …+ 125℃
- Linearity 0.15 % (typical)
- Small Die Size 2.00 X 1.86 mm
- Low cost, High reliability

APPLICATION

- For high resolution absolute sensor systems
- Engine Controls
- Barometers, Altimeters, Variometers

ELECTRICAL CONNECTIONS

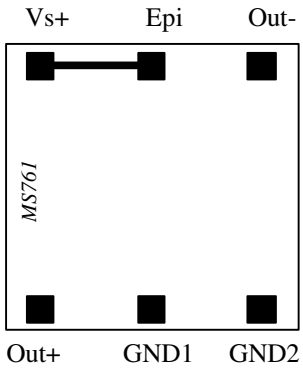
Positive output for pressure applied topside



Vs+ : Supply voltage of Wheatstone bridge
Epi : Connection of epitaxial layer (membrane)
Out- : Negative output
Out+ : Positive output
GND1 : Ground
GND2 : Ground

[1] The European RoHS directive 2002/95/EC (Restriction of the use of certain Hazardous Substances in electrical and electronic equipment) bans the use of lead, mercury, cadmium, hexavalent chromium and polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE).

PAD OUT



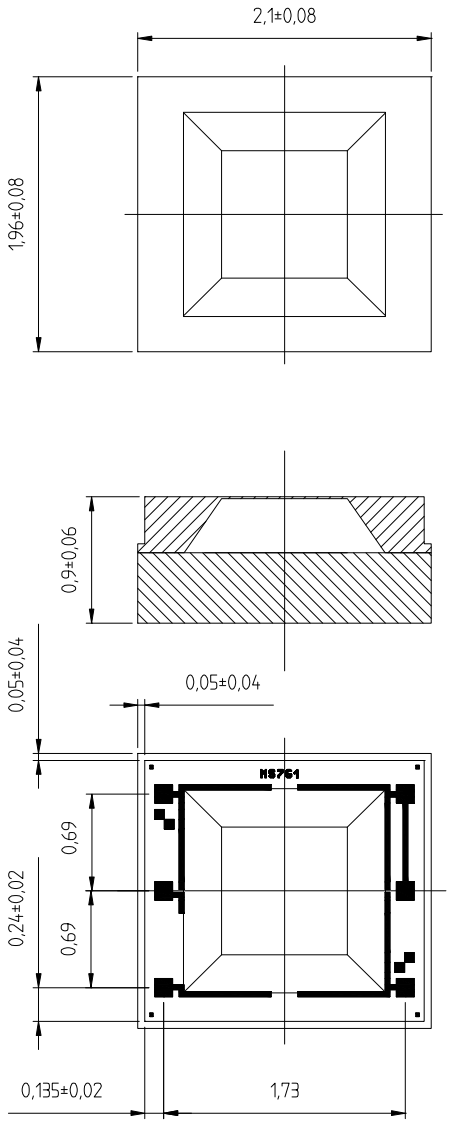
Important remarks:

As the sensing elements are diffused resistances, the voltage applied on the ground pads (GND1 and GND2) has to be lower than the voltage applied on supply voltage pad (Vs+).

The epitaxial layer is connected to the Vs+ pin on the die

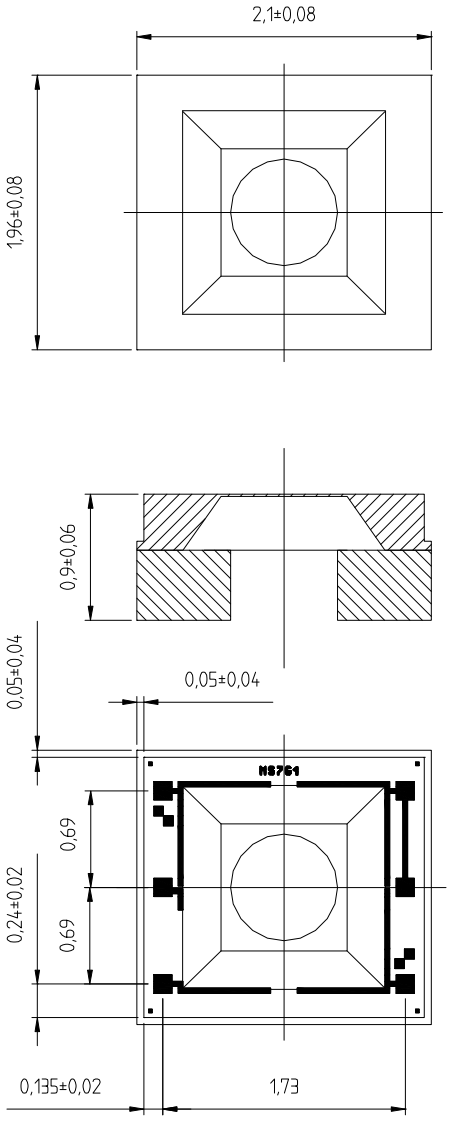
LAYOUT

MS761A



Bondable area = 100 x 100 um

MS761D



Bondable area = 100 x 100 um

FULL SCALE PRESSURE

kPa	bar	mbar	PSI	atm	mm Hg	m H_2O	Inches H_2O
100	1	1000	14.5	0.987	750	10.197	401

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Conditions	Min	Max	Unit
Supply voltage	VS+	Ta = 25 °C		20	V
Storage temperature	T_S		-40	+125	°C
Pressure overload				5	Bar

ELECTRICAL CHARACTERISTICS

(Reference conditions: Supply Voltage VS+ = 5 Vdc; Ambient Temperature Ta = 25°C)

Parameter	Min	Typ	Max	Unit	Notes
Operating Pressure Range	0	-	1	Bar	
Operating Temperature Range	-40		125	°C	
Bridge Resistance	3.0	3.4	3.8	kΩ	
Full-scale span (FS)	190	240	290	mV	
Zero Pressure Offset	-40	0	40	mV	
Linearity		± 0.15	± 0.4	% FS	1
Temperature Coefficient of Resistance Span Offset	+ 2400 - 1500 - 100	+ 2800 - 1900	+ 3300 - 2300 + 100	ppm/°C ppm/°C µV/°C	2
Pressure Hysteresis		0.05	± 0.15	% FS	3
Repeatability		0.05	± 0.15	% FS	4
Temperature Hysteresis			0.3	% FS	5

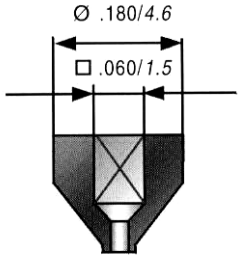
NOTES

1) Deviation at one half full-scale pressure from the least squares best line fit over pressure range (0 to 1 bar).
2) Slope of the endpoint straight line from 25°C to 60°C.
3) Output deviation at any pressure within the specified range, when this pressure is cycled to and from the minimum or maximum rated pressure, at 25 °C.
4) Same as 3) after 10 pressure cycles
5) Maximum difference in offset after one thermal cycle from -40°C to +125°C.

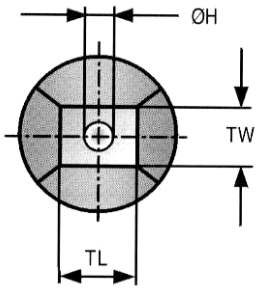
PICKING TOOLS

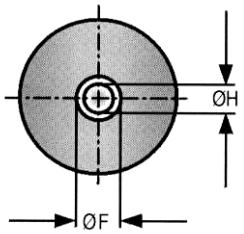
The MS761 sensors have a sensitive membrane (0.9 x 0.9 mm) the sensor dice outer diameter is: 1.93 x 1.76 mm. The pick and place tool has to be of a soft material as rubber (Hardness 78-97 Shore A). Its external size must fit the sensor and the vacuum cavity must be as large as the membrane itself. Successful test where done with some tools of SPT, see SPT drawing and references bellow).

SPT references	RTR-A1-060x060	CTR-A1-080
External dimension	TL & TW: 0.06 inch /1.52 mm	∅F: 0.08 inch / 2.03 mm
Internal dimensions	∅H: 0.035 inch / 0.89 mm	∅H: 0.035 inch / 0.89 mm



Type A





ORDERING INFORMATION

Product Code	Type	Product	Art.-Nr.
MS761-A	Absolute	1 bar Pressure Sensor Die sawn on b/f	76125021
MS761-A_0.2	Absolute	1 bar Pressure Sensor Die 0.2 mm Pyrex sawn on b/f	76125022
MS761-D	Differential	1 bar Pressure Sensor Die sawn on b/f	76125121

The MS761 dice are supplied sawn on blue foil, mounted on plastic rings

FACTORY CONTACTS

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